

ABSTRACT

A method for real-time determination of the mass of particles in a particle filter fitted to the exhaust line of an internal combustion engine. The following data – temperature $T(t)$ of the exhaust gas at the filter input, oxygen $[O_2(t)]$ and nitrogen oxide $[NO_x(t)]$ concentration of the exhaust gases entering the filter – is used to calculate the rate of combustion of the particles in the particle filter with the aid of kinetic laws of chemical reactions of particle combustion. The rate, the rate emission of particles from the engine $F(t)$, and the mass of particles in the filter $m_c(t-\Delta t)$ obtained during the cycle of operations prior to the moment $t-\Delta t$, is then used to calculate the mass of particles in the filter,

$$m_c(t) = m_c(t-\Delta t) + [F(t) V(t)] * \Delta t.$$